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THE HERNIA GUARANTEE AND THE MINIMUM OF CONFINEMENT AFTER OPERATIONS FOR APPENDICITIS WITH AND WITHOUT PUS.*

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The writing of this paper was suggested by the perusal of an article by Dr. George Woolsey on "Some Points in the Treatment of Appendicitis when Pus is Present," which appeared in the MEDICAL RECORD of April 1, 1899. The points or propositions contained in this article are admirable so far as they go, the only objection being that they do not go far enough. In one or two respects, as I hope to show, they stop just short of the ideal surgery applicable to the class of cases under consideration. Before discussing the surgical management of cases of appendicitis with the presence of pus, to which Dr. Woolsey's paper relates, I may be permitted a few remarks relative to the technics of operations for both acute and chronic appendicitis, with absence of pus.

The readiness of surgeons at the present day to advise and undertake operation for chronic appendicitis is based upon a recognition of the following facts:

1. Chronic appendicitis not only debars its victim from the full enjoyment of health and happiness, but is a direct menace to life itself by reason of the ever-present danger of implanted attacks of acute appendicitis.
2. Chronic appendicitis dependent upon movable right kidney may, as shown by the writer,^{9, 10} occasionally and under favorable conditions apparently end in resolution and remain permanently cured after right nephropexy. The only other cure of chronic appendicitis possible, outside of operation, is by slow and uncertain progress of the inflammation to obliteration of the appendix, a process entailing years of suffering and constant peril of life.
3. The diagnosis of chronic appendicitis can be made in every case by the method of palpation of the veriform appendix, elaborated and first described by the writer.^{5, 6}

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4. The mortality of operations for chronic appendicitis is practically *nil*. I have operated for chronic appendicitis one hundred and thirty-two times in all, without losing a single patient.

5. With up-to-date technics a patient may leave his bed well within a week, and be back at his usual occupation at the end of two weeks or less after an operation for chronic appendicitis.

6. With proper and faultless technics hernia and a disfiguring scar can be absolutely guaranteed against, and this irrespective of the length of the incision required in the particular case.

We have at our disposal at present, to meet the indications of any given case, three good and perfectly satisfactory incisions for the surgical treatment of chronic appendicitis: the gridiron incision of McBurney, the rectus incision of Battle, and the lumbar incision. The old incision parallel to Poupart's ligament, or any incision severing the various abdominal muscles in one and the same line, should find no place in the work of the modern surgeon.

The gridiron incision of McBurney,¹⁴ dividing or separating the muscular fibres of the various planes of the abdominal wall in the direction of the fibres of each muscle, is too well known, and its merits are too generally recognized, to call for further remarks.

The incision through the rectus muscle, sometimes called the trapdoor incision, is not so generally known and practiced as its advantages merit. W. H. Battle,^{1,2} is its author, although it was subsequently described by Jalaguier,¹¹ Kammerer,¹² and Lennander,¹³ each apparently under the impression that the method was original with himself. Deaver⁴ has admirably illustrated this incision. It consists in a vertical incision within the outer edge and parallel to the fibres of the right rectus abdominis muscle. After dividing the aponeurosis of the external oblique and the anterior sheath of the rectus muscle, the outer edge of the muscle itself is drawn inward and the posterior sheath of the rectus or transversalis fascia with the peritoneum is cut through. Lennander in his first cases divided or separated the fibres of the rectus muscle in the same line with the original incision, and I still prefer this method, which I have now employed for several years. The reasons for this preference lie in the fact that it enables us to open the rectus as near as we please to the median line. An incision thus placed avoids the division of large nerve trunks and constitutes an obvious advantage in women, in that it enables us to determine by palpation and, if necessary, by

inspection the condition of the uterus as well as of both ovaries and tubes. For this purpose the incision is made just long enough to admit of the introduction of two fingers. Another advantage of the Battle incision is that it can be readily extended upward or downward as far as may be necessary, as, for instance, in tracing and enucleating a diseased appendix running upward to the vicinity of the liver, or in carrying out any operative procedure upon the uterus or its adnexa. The gridiron incision, on the other hand, has its well-marked anatomical limitations beyond which it becomes impracticable.

The choice between the McBurney and the rectus incision is determined by palpation of the appendix at the time of operation after the patient is anaesthetized. If the appendix is found within reach of an incision through the rectus, or if it can be displaced by the fingers so as to be brought within reach of such incision, the incision of Battle is preferred. Contrary conditions obtaining, the gridiron incision is employed. As a matter of fact I have of late years employed the rectus incision in chronic appendicitis at least four or five times to every once that I have felt impelled to resort to the gridiron incision.

In closing either the gridiron or the rectus incision, a running suture of forty-day catgut applied in the manner described by the writer⁸ is employed. Hernia is thus guaranteed against, and my patient may leave the bed, if he or she chooses, at any time after the bowels have moved on the third day.

The third or lumbar incision for chronic appendicitis, original with the writer,⁹ is applied only when right nephropexy is performed simultaneously with appendectomy. I have thus far operated upon the appendix fifteen times through the lumbar incision.

The skin in each of the three incisions is closed by the intracuticular suture to avoid a disfiguring scar, a matter of some importance to most women.

As regards treatment of the appendix itself in cases of chronic appendicitis, inversion of the entire uncut appendix, as originated by the writer,⁷ is preferred in all cases in which it is practicable. I have thus inverted the entire appendix in one hundred and sixteen patients, ninety-seven of them suffering from chronic appendicitis. In the remaining nineteen patients the normal appendix was inverted incidentally on the occasion of cœliotomies undertaken for the relief of other conditions.

While the technics of operation for chronic non-purulent appendicitis may be said to have reached an absolutely satisfying stage and to be considered as having done so by surgeons as a class, the same cannot be said of the operation for appendicitis with the presence of pus. A great many, if not the majority, of gynaecologists the world over have practically abandoned drainage for pus in the pelvis, closing for primary union after careful cleansing in nearly all of their cases of pus limited to the pelvis. Although the analogy between purulent appendicitis on the one hand and pyosalpinx, ovarian abscess, etc., on the other hand, does not hold good in all respects, still I believe that further experience will lead us to close for primary union in a proportion of cases, at least of appendicitis with pus, after removal of the diseased appendix and careful cleansing and disinfection of a limited area of infection. Such cases will, of course, as far as the period of confinement and the guarantee against hernia go, be upon about the same plane with cases of chronic appendicitis.

We come now to a fact not sufficiently well understood and recognized—to wit., that even in cases of appendicitis with purulent infection so virulent or so extensive that drainage becomes indispensable, the resources of our art enable us to reduce the period of confinement to two weeks or less on the average, and to guarantee our patients against hernia. How this end is attained the writer will endeavor to show by outlining his present technics in the operation for acute appendicitis with pus.

In the first place careful palpation is made of the tumor mass after the patient is anaesthetized and before the incision is made. The plan of the incision is based upon the result of such palpation. If the centre of the tumor mass lies behind the right rectus muscle, the incision is carried through that muscle parallel to its fibres. Whenever, as is almost the rule, the most prominent point of the tumor is located laterally to the rectus muscle, the gridiron incision of McBurney is employed, and is so placed that the intersection of the line of cleavage of the external oblique with that of the internal oblique and transversalis corresponds exactly to the middle of the tumor. Retracting the muscles we have the tumor mass squarely exposed. If the abscess is found adherent to the anterior abdominal wall it is incised, all pus gently mopped out, and the walls disinfected either by peroxide of hydrogen or gauze moist with sublimate solution before proceeding in search of further collections of pus. If the abscess be situated against the posterior wall of the abdomen separated from the parietal incision

by the intervening free peritoneal cavity, the latter must be protected by a properly placed wall of gauze. Each successive collection of pus is treated in the same way before proceeding to search for more, until we are satisfied by palpation that no further purulent foci exist. Not until then is the appendix, or what may remain of it, removed, if possible, by amputation just beyond its origin from the caecum, and the stump inverted without ligation after the method of Dawbarn.³ A loose and slender column of gauze is next arranged for drainage, leading in a straight line from the site of the inverted stump to the opening in the anterior abdominal wall. The quadrangular form of the latter, due to the retraction of the separated muscular fibres and the placing of the centre of the incision over the centre of the tumor mass, will insure free and direct drainage. No sutures of any kind are placed.

The slender gauze column is diminished in bulk after two or three days and withdrawn entirely as soon as possible thereafter, sometimes as early as the fifth day. The object in proceeding thus is to allow the intestines to come together as rapidly as consistent with the safety of the patient, and thus to obliterate as speedily as possible the cavity formed by the column of gauze. As soon as this cavity is obliterated and the granulations have reached the level of the bottom of the abdominal incision, the wound is carefully disinfected, rawed, and closed for primary union. An anaesthetic is administered, and the wound is circumscribed by an incision through the healthy skin, carried as close as possible to the granulating edge of the latter. The granulating surface of the wound is dissected off in one clean piece from skin and subcutaneous fat, from the fibres and aponeurosis of the external oblique, from the internal oblique and transversalis, and from the peritoneal edge. The granulations presenting at the bottom of the wound are lightly scraped away with a spoon curette. We have now before us an incision identical in every particular with the freshly made gridiron incision, skin, fat, aponeurotic and muscular fibres lying bare in all the pristine freshness of the original operation. The peritoneal edge, the separated muscular fibres, and the aponeurosis of the external oblique are brought together by a continuous suture of forty-day catgut carried in two tiers and tied with a single knot.⁸ This suture is buried by closing the skin by means of the intracutaneous suture, and the operation is finished. On the next or the third day the patient bids adieu to his bed. The duration of

confinement after an operation for appendicitis with pus, in which drainage is demanded, will have been the time required for the abscess cavity to become obliterated up to a level with the deep surface of the anterior abdominal wall, say from five to ten or twelve days, plus a day or two required to get well over the effects of the anaesthesia of the second operation—a total period of confinement to bed of from one to two weeks. Primary union is attained with no less certainty, although with the necessity of greater painstaking, than in fresh incisions of the abdominal wall, and with up-to-date technics the guarantee against future hernia is equally good.

So vast is the literature of appendicitis, embracing more than twenty-five hundred books and journal articles, that it is almost inexcusable to add thereto except for very good reasons. The writer has just completed the task of looking through this entire voluminous literature, and as the result of his labors has reached, among others, the following conclusions :

1. Sufficient attention has been called to the technics of the perfected operation for chronic appendicitis, to render ignorance thereof inexcusable on the part of any one practising abdominal surgery.
2. The technics of the operation for acute appendicitis with pus still form a subject for discussion. The principles underlying the operation, as enumerated in this paper, will, if adopted, lead to results as satisfactory, comparatively, as those obtained in chronic appendicitis.
3. The value and universal applicability of the gridiron incision of McBurney in cases of acute appendicitis with pus, though dwelt upon of recent years by a number of American surgeons, are not in practice sufficiently appreciated.
4. Nor is the fact too widely known that the duration of confinement after operation for chronic appendicitis need not exceed a week, and may indeed be considerably shorter.
5. The duration of confinement after operations for acute appendicitis with pus, excepting cases in which fecal fistulæ form, need rarely exceed two weeks at the outside. Since putting into operation the technics above outlined, the longest period of confinement in the writer's practice has been in one case fifteen days. In that case five separate intraperitoneal pus pockets had to be drained, and the wound was not ready for secondary closure until fourteen days after operation.
6. Hernia need no longer be dreaded after operations for appendicitis, acute or chronic, with or without pus.

7. There seems to be no longer any good reason why all patients suffering from appendicitis, acute or chronic, should not have the benefit of operation.

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